FO OUTLOOK
NASA AMES RESEARCH CENTER

Information for the NASA Ames Aeronautical Test Community October 7, 1999

Tailplane Icing Test Chills 40x80 Wind Tunnel

by Paul Askins, Tailplane Icing Test Manager

Tail Plane Icing Model in the 40x80 Wind Tunnel

That cool breeze you have been feeling lately does not mean that summer is almost over, but infact, it was probably the frigid air blowing from the 40x80 wind tunnel. An icing test? At Ames?? In the summer??!! You heard right! Sponsored by NASA/Glenn (formerly NASA/Lewis) Research Center, and supported by Wichita State University, the Tailplane Icing Test is a full-scale investigation of the effects of tailplane ice formation on the performance of a generic business jet tail configuration.

Tailplane icing has been implicated as the primary cause of several accidents involving business and short-haul commuter aircraft. These types of aircraft, operating in cold climates, are particularly at risk to develop tailplane ice, since much of their flight envelope is at low altitudes. Worsening the situation is the fact that the recovery techniques for pilots encountering a tailplane icing stall are frequently exactly the opposite of those needed to recover from a conventional wing stall. Thus, tailplane icing is a potentially very serious problem for pilots operating at low altitudes in cold climates. The FAA and NASA/Glenn have developed a Tailplane Icing research program to gather data with the goal of training pilots to better recognize and react to the possibility of an icing induced tailplane stall.

The Tailplane Icing Test's objectives were to measure the performance characteristics (lift, drag, pitching, rolling, and elevator hinge moment) of an actual business jet "empennage" (horizontal and vertical tail) contaminated with several different sizes and shapes of simulated ice formations. Simulated you say? Yes, sadly it wasn't possible to get the 40x80 cold enough to use the real

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TCA - 5 Test in 12ft; Last In a Series of Five

By Veronica Goldman

On July 21st, evaluation began on the fifth series of tests of the Technology Concept Airplane in the 12ft wind tunnel, here at Ames. TCA-5 is the second of the series of tests that is evaluated here; one year ago TCA - 3 was also conducted at Ames. TCA -1,2 and 4 were all tested at Langley in the 14x22 Wind Tunnel. Through the five tests, the focus has been developing a better way of building a high speed civil transport. When this technology is created it will get transferred to Boeing, who will be able to use the new technology when it is needed.

5th Technological concept airplane model in the 12ft

Lead researcher for TCA - 5, Mina Cappucio outlined the three main objectives that are hoped to be accomplished by the time the test is completed. The first objective is to look at the Reynolds number affects on the planform. TCA - 5 is using two different planform configurations. The difference in the second configuration is the change of the outboard sweep angle, while the inboard angle was kept the same. The second objective is to look at other leading edge devices to try to improve Lift over Drag (L over D). TCA - 4 also focused on different plan-

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Tailplane Icing Test Chills 40x80 Wind Tunnel... *(Continued from page 1)*

thing! The simulated ice shapes ranged in size and shape from strips of coarse sandpaper, to 4" thick, 2-lobed pieces made of foam and fiberglass. The ice shapes were applied to the full length of the leading edge of the 16' span horizontal tail. Each ice shape represented a specific type of ice accretion, taken from icing studies done in wind tunnels and flight-testing. The effects of each size and shape of ice varied, but were usually seen as a decrease in the maximum lift coefficient, lower stall angles than the clean tail, and increased drag. In addition, surface pressure and boundary layer thickness measurements were taken to further characterize the effects of the simulated ice contamination.

Tail Plane Icing Model

The empennage model was mounted on a custom-designed "T"-frame, mounted on a conventional three-strut arrangement. The unique model support structure, designed by Code FEE and built by March Metal Fabrication, featured a 4" Task internal balance, that accurately measured model loads at low tunnel speeds. At higher speeds, this balance was mechanically locked out, and model forces and moments were measured by the facility scale system. In addition, flow visualization techniques were employed to further understand the flow conditions around the tailplane. In a first for the NFAC, a liquid crystal paint application was successfully used to visualize shear stress and flow re-attachment points on the lifting surface of the horizontal tail. Conventional yarn tufts were employed to help researchers visualize the full-scale three dimensional flow-field.

Of primary importance to the Tailplane Icing research team is the effect of Reynolds number on the performance increment produced by the ice shapes. Much small scale tailplane icing research has been performed, but nearly all of the full-scale data has been obtained from flight testing. The 40x80 test facility allows the researcher to collect full-scale, flight-Reynolds number performance data in the controlled environment of the wind tunnel. This will then be compared to the small scale database to correlate the effects of Reynolds number on the performance of the tailplane under icing conditions. Ultimately, the data will be used to help refine computational and flight simulator models, to allow pilots to train for encountering an ice-induced tailplane stall.

The test began tunnel operations on July 2nd, and two-shift operation began July 12th. Primary test crew included Mike Lopez, Ron York, Ruben Torrecampo, Felton Smith, Steve Nance, Joe Paz, Ira Chandler, Mike Simundich, Leon Quintela, Mitch Roe, Tim Gildersleeve, Paul Stuart, Bruce Storms, Jessica Phillips, Jason Brown, Dale Satran, Mario Perez, and Precioso Gabrillo. Dan Reda and Ron Kruger planned and executed the liquid crystal flow visualization testing. For those interested in learning more about the subject of tailplane icing, NASA/Glenn has produced an informational video for pilots. Please contact Paul Askins @ extension 4-3546 for more details.

Wind Tunnels; A Profitable Enterprise? Now more then ever... *By John Allmen*

The fourth in a series, this article looks at why FY2000 is our most critical year for wind tunnel operations, how our customer base is shaping up for 2000 - 2005, and what our current understanding is for our capabilities. Why is 2000 our most critical year? FY 2000 is the last year we receive subsistence funding for our operations. In 2001, we are funded by full cost recovery. If we do not have customers (NASA and commercial) that use our services, we will not have wind tunnels open, we will not operate. While this statement is true and creates a major challenge for us, we will certainly be operating in 2001 and beyond. Let's take a look at the facts.

Our "test planning" horizon for FY 2000 through 2005 is positive. We are not "out of the woods" by any means, but FY 2000 customer requirements have nearly filled the NFAC for one shift. Boeing and Lockheed Aircraft Companies have both asked for time in the 11' when it becomes operational March 27, 2000. We are at a race against time and money to have the 11' operating with a full production capability by March. With a successful bid for the Joint Strike Fighter (JSF) competition we will ensure that wind tunnel facilities play a vital role in the development of the next generation fighter aircraft. This JSF development phase requires up to 25,000 hours of testing between 2001 and 2005. We are working hard to bid on over 1,000 hours of testing each year.

Our key NASA customer for rotor research (Code ARA) continues to have a strong need for the NFAC. We also have a number of commercial customers who want to test a number of full-scale items such as cars, trucks, rides, signs, etc. The majority of the NASA aeronautics program is focused at Langley Research Center who tends to keep basic research "close to home". We are working to improve the use of our tunnels for those programs.

How we "appear" to a customer is so very important for very good reason. Not only is it just good business, but the aeronautics "testing community" is a close knit group of professionals who know each other well and are in constant communication. As an example, we hear "same day status" of wind tunnels around the world, particularly when there is a mishap. Word of mouth with positive referrals is the most important advertising we have. That is why it is very important that every customer experiences the very best we can give. An example of word of mouth communication is the recent 12' TCA-5 test. Remember how we so reluctantly cut back on the 12' operations to the leanest staff possible? We were concerned that we could not support a "happy" customer. The TCA-5 test personnel from LaRC went home singing praises for the way Ames does business. They were impressed with the knowledge and competence of our test team, the quality of work, the speed with which we

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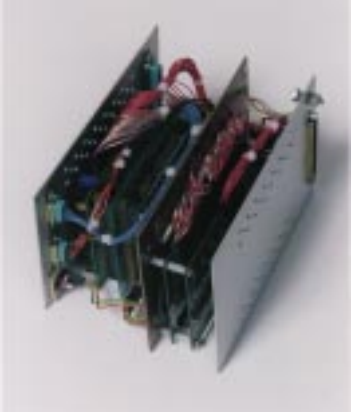
Embedded Data Systems

(by Kevin James)



The Embedded Data System

One of the significant problems facing wind-tunnel test engineers and researchers is contamination of wind tunnel data. We've known for some time that these problems are more severe in facilities that require long line lengths, such as the 80x120 Wind Tunnel, or have severe noise (EMI and RFI) environments, like the 12-Ft. Pressure Wind Tunnel. Our work with embedded data systems is an attempt to keep the data "clean", no matter what environment or distance it travels through to the data acquisition systems.

The current state of wind tunnel test does an excellent job at getting high quality data. However, if you take a step back, it has always seemed a little strange that we run our most sensitive and delicate low-level signals (from balances and pressure transducers) hundreds of feet to the control room, where we condition, filter, and gain the signals. Once the signals have been filtered and boosted, they are moved just a few feet to the data acquisition computers. Wouldn't it make much more sense to condition and boost the signals *before* we send them down the wires for hundreds of feet? An embedded data system does just this, the signals are gained, filtered, converted to a digital signal, and *then* sent to the control room. The embedded data system is ideally buried in the model, as close as possible to the sensors. This reduces or eliminates the effects of high RFI or EMI on the signals.

Hiro Kumagai

Hiro Kumagai (AerospaceComputing, Inc. and long-time NFAC groupie) has been working with embedded systems for over eight years. We felt that one of the final HSR Program wind tunnel tests would be an ideal candidate to prove the worth of a modern version of his embedded data system. Although one of the motivating factors was to develop a system for use in the 12 ft. PWT, the noise environment in the NASA Ames 7x10 wind tunnel can be high enough to provide a serious test for the embedded data system. It was decided that we would demonstrate an embedded data system on the Task/Able balance data for a CFD validation test of the HSR Ref H. (2.2% scale model) in the NASA Ames 7x10 wind tunnel.

An embedded data system was developed and used to acquire all the test data. All the instrumentation was placed in one package inside the sting support housing. The low-level signals traveled 8 feet (instead of the more traditional 100 feet). The embedded data system was capable of doing v-cals (calibrating the individual excitation voltages for each channel), r-cals (calibrations of line resistance and temperature effects), and with minor modification could provide safety of flight (BLAMS) data. The system delivered digital data through an ethernet connection to a Macintosh based LabView data acquisition computer (instead of the traditional low-level analog signal to the control room).

The embedded data system worked extremely well and met all the goals we had set. The system was not responsible for any down time and most importantly it demonstrated the ability to get clean data in a very noisy environment (i.e. this is the first time it was possible to acquire clean data while moving the wind tunnel traversing system). With the achievements this embedded data system has accomplished so far, it is obvious that continued investment in this type of technology will be very rewarding.

The Wind Tunnel Operations Golf Tournament

By Dave Engelbert

Bright sun and warm temperatures were the norm for the thirty-six golfers participating in the tournament held on August 19 at the very nicely renovated Palo Alto municipal course. The participants demonstrated a wide range of skills with the lower end of the scale being well represented.

Teams of four competed in a scramble format. The organizers of the event (Dave Banducci, Tom Bridge, Gary Sorlien, and Philip Stich) did a fantastic job and selected teams so evenly matched that there was only a six stroke difference between the winning team and the last place team.

The winning team was led by "sink em" Bob Olgiati and strongly supported by "drive em" Paul St. Germain, and "chip em" Jean Brian (Dave Banducci was also a low key member of the winning team). Honors for the longest drive of the day went to Art Beede with a superb shot of 308 yards!

Winners (L to R): Dave Banducci, Jean Brian, Bob Olgiati, Paul Germain

Goodbye & Good Luck to FO

As I leave the role of Division Chief for code FO in August of 1999, I find myself experiencing some of the same feelings that I had when I first came to FO in August of 1998. My time here was both challenging and rewarding. I found it challenging because of the awesome needs facing the division to get the facilities operating in the face of budget cuts and the lack of customers. It was rewarding because of all of the capable people available to call upon to meet these challenges.

Jerry Mulenburg

Many people in the division willingly accepted new roles during the past year and executed them with skill and competence, including those rotating as Deputy Division Chief, Branch Chief, and Facility Manager. We had a few outstanding new people join the division, but lost a few good friends who leave large holes in our corporate knowledge, and in how to get the job done.

I feel good about many of the accomplishments that happened during the year, though I can take little credit for them personally. The smooth transition to a new contractor was certainly an early highlight, and the high degree of professionalism shown by both the new management staff and all of those transitioning from the previous contracts made it almost seamless to the division management. The outstanding work by the SEB and its highly competent members should be a goal for all contracts. The joint Sverdrup and civil service management retreat helped to initiate a number of teaming activities and provide improvements that will continue for some time to come. The continuing partnership activities, joint staff meetings, and social events such as the recent golf outing, all contribute to maintaining this high quality working relationship.

The lack of progress on the 11' Unitary project during this year is extremely disappointing, but somewhat offset by the exceptional and outstanding progress in a very short time on the 9x7. Despite budget cuts that will put the 12' in a stand-down status in FY00, the 12' accomplishments this year were outstanding, as were the many tests completed in the NFAC. World recognition for the Wright-flyer test, as well as other high-profile tests, will keep NASA / Ames, and FO, in the forefront of America's excitement for what you do, and do so well. I want to thank all of you for helping me to truly become "one of you" during the past year, and to congratulate each of you, contractor and civil servant, on your outstanding accomplishments and the dedication you bring to your jobs. As I fade out of 227, I will continue to call on your expertise and good will in working cooperatively with FM on the many joint efforts I know will be happening in the future. Be safe, and have fun.

Jerry Mulenburg

Looking Forward to the Future of Wind Tunnel Testing!

It is great to be back! The Stanford Sloan Program was fun, but after a year of finance and accounting courses it's great to get back in touch with reality. One thing I noticed on my return, actually it was hard not to notice, is that FO is experiencing challenging times. More than "just an understatement" we do have our work cut out for us. This past year, the intense business focus of the Sloan Program taught students to see the world as a unique business adventure. This perspective truly defines what we are experiencing with the operation of our wind tunnels.

We are on the edge of a success story that will bring the wind tunnels at Ames back to the forefront in the aircraft development arena. Getting the Unitary 11ft up and running has been our first priority, and I want everyone to know that is indeed my first priority. I have taken steps to review the UMP project in detail and to work with our division staff, Code FE, the project staff and the Code F Directorate to develop and implement the most positive success plan for getting our first customers into the 11' by mid March 2000. We all agree that this plan is the most realistic approach to making positive things happen.

Our combined approach is to integrate the IST, Calibration and Validation phases into a single effort with a single focus, which is to have the facility production ready for our first customers next March. In addition, we are integrating the lessons learned from the 12' and the NFAC including the training of our staff to address and manage the expectations of our customers. The customer orientation and our managing of customer's expectations are critical to our success.

We are facing a problem that presents as great an opportunity as it does a risk. Our budget is continuing to be cut and challenged. The budget is shrinking faster than we are bringing facilities online. Why is this? Funding for NASA's Aeronautics Enterprise is being redirected by the Administrator to support new initiatives and the Space Station Program and in addition the emphasis at Ames is moving towards the Space and Information Technology sectors. We need to counter this trend by having the facilities speak for themselves, both in capability and the effective way we operate them. It must also be remembered that in the current environment that places a large focus on cost and schedule, we need to keep a similar focus on success defined by the resulting capabilities, and safe operation of our facilities.

We all must realize that we hold our destiny in our hands, i.e., getting the facilities up and the subsequent operations of the facilities. Our understanding and acceptance of this fact should drive us to become the personal owners of these great facilities and the personal custodians of their success. Join with me in the challenge and opportunity of our lifetimes to make the difference in the operation of our wind tunnels and our support for our customers.

Mike George

The Second 1st Annual Wind Tunnel Cook-Off

11:30 was just around the corner, and still the cooks were scrambling to put the finishing touches on their masterpieces. Apples stuffed into the pigs' mouth, sauce poured all over the chicken, butter chopping, salad tossing, balloon filling...This was the scene on the 26th of August, as FO prepared to celebrate its SECOND 1st Annual Wind Tunnel Cook-Off. Although there was a lot to look forward to during the next two hours, most of us were ready for one thing --The Food. With a feeling of excitement in the air, the picnic got off to a great start, with everyone enjoying the different dishes prepared by our three teams; 12ft Bad Boys, Unitary NBC (Nothin' but chicken), and the NFAC. And while the votes for the best meal were being counted, the games were beginning. For additional enjoyment, a new game was introduced and received with open arms at this picnic - The Sponge Toss. Everyone took great joy in throwing those wet sponges at the managers. It was obvious that some of us were once part of little league. The guys in the wet seat also seemed to enjoy themselves immensely. On a hot day like this, who wouldn't appreciate some nice, cool, wet sponges. Then came the award for best cook. Drumroll please —-"And the winner is...THE 12FT BAD BOYS." And so it was, with its head held up high, the pig took home the prize. But how could we forget the raffle. Everyone was hoping, but only the lucky ones got the prizes. And some great prizes at that. A TV, CD player, A's tickets, gift certificates, etc...Not bad for a $1 spent. Jerry Mulenburg was pleasantly surprised when he was presented with a photo of the Wright Flyer signed by all of his friends and colleagues here at FO. It was obvious that he would be missed a great deal. All in all the picnic was a fun distraction from our everyday duties. We all took our mind off work; even if just for two hours, we enjoyed each others' company and hopefully all had a good time and are now awaiting the Third 1st Annual Wind Tunnel Cook-Off.

Tom is obviously just asking for it....

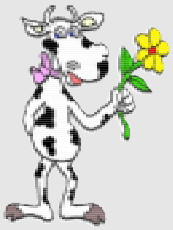
...And Pete is happy to oblige!

John is just happy to have a helmet!

And the winner is...

Don't worry Horacio, the pig loves you too!

Even with wet pants, Phil still seems to be enjoying the day.



Hey Mike, did you miss us?...Bet they don't do this in Stanford!

Proud cook, Bob Gisler displaying the NBC creation

By Veronica Goldman

Wind Tunnels; A Profitable Enterprise?... *(Continued from page 2)*

conducted their test, and the high reliability of the facility. Their comments were; "Wow! Why can't our facilities at Langley be run this way?" Hats off to the 12' team for an exemplary job! The NFAC staff has also served its customers at this same level of competence. Recent improvements made in facility reliability have been an important effort for them. We are all working hard to implement this same level of service for the Unitary.

Budget cutbacks for us in the near and long term are very serious, challenging our survival. As we build a new foundation of operations, we see the legacy of our past eroding and a different environment developing. We work as hard as we ever have, making do with less, becoming more inventive and knowing everything we do does matter and it does make a difference.

Our most critical year is FY2000, the new millennium and our new beginning. The last year of supplemental funding, the last year for making the NFAC and Unitary full production tunnels. It is the year we get ready for full cost recovery, the transition year of doing things totally different, successfully managing every customer's expectation, successfully launching our new business. We continue to do amazing things. We are NASA and are always the leader in success, especially in the face of challenge and adversity!

Don Nickison; New COTR for code FO

(by Veronica Goldman)

In January of 1999, Don Nickison joined code FO to become the divisions' new Contracting Officer Technical Representative (COTR). Since that time Don has had the chance to become acquainted with FO, the people, the tasks, and the environment. And with much enthusiasm he spoke about his history at Ames, his plans, expectations and short and long-term goals.

Don Nickison

Don started his journey at Ames as a grad student in 1987 at which time he worked in plant engineering (now code JFP). After which he went to work for a contractor in the 87-88 timeframe and worked for a contractor for a period of three years. He became a NASA employee in 1991 as a project engineer and group leader in plant engineering. Don then became the assistant branch chief until there was a merging of organizations and in 1995 he moved to code FEF to become the assistant branch chief there until this January. At the present time Don is working for the Sverdrup contract, the primary contract for code FO. "My overall goal is to keep the contract healthy, so we succeed." Said Nickison. But he realizes that there is a lot that goes into making that goal into a reality, "…we are trying to work this partnership, and trying to understand that what we need Sverdrup to do and what is good for us are not always the same thing. My ultimate goal is to keep that relationship working."

In the last nine months, the experience of working for FO has been one of learning and adjusting. But when asked what the best part of working for FO is, his answer is clear; "The People! This is a real great team to work with. Both on the contract and civil servant side" said Nickison, "It is just so impressive to be in this environment." And what does he feel is the primary goal for this division? "I think we are chartered by the agency and by the center to do wind tunnel testing or aerospace testing better then anybody else. And that should be our goal" said Nickison, "and if we do it better and cheaper then others, business and customers will come to us and we will succeed."

As for his personal goal for the near future Don hopes to be able to successfully combine the science and the technical side of wind tunnel testing with his administrative and engineering background. "For me to help the organization to make the right kinds of decisions to get our business to succeed, I need to have a better technical breadth. That is my primary goal." And as Don is reaching his goal, our division is reaching its.

TCA - 5 Test in 12ft; Last In a Series of Five... *(Continued from page 1)*

forms, but because they were running at one atmosphere, the Reynolds Numbers were very low. Also, the leading edge devices at the time did not meet the projection levels expected for L over D. New and different designs for leading edge devices were developed and tested to see if improvement can be made on that planform; which is called Wing 3. And the third and final objective is to improve the longitudinal and lateral directional stability. This objective was accomplished by testing two different canards on the full body of the model. The first is a mid-mount canard, and is mounted mid-way on the fuselage in the front. The second is a high-mount canard, which is on a 30-degree dihedral, and sticks up on top of the forebody. The two different canards are being tested in order to look at the stability and control issues on the airplane.

During the TCA-4 test, the mid-mount canard was tested, and it was noticed that a vortex was shed off the canard and was going into the engine. Because there should not be anything interrupting the flow that goes into the engine when the airplane is taking off, the decision was made to test the high-mount canard. To try to prove that the high-mount canard is better then the mid-mount canard, they are tested at different angles of attack and also are subject to beta sweeps. Also, the laser smoke screen technique, where smoke is injected into the tunnel and the laser system is used, to actually see the vortex and where exactly it goes. The goal is is to also prove that because the high-mount canard is moved up to the top of the fuselage, there is nothing that goes into the tail.

The installation of the model originally took longer then expected due to PSI problems, which are associated with the facility being down before the start of the test. Also during the rush to finish the installation, the cavity pressure was not checked. It took some time to figure out how to fix the data on the Wing 1 runs based on Wing 3 cavity pressures.

The TCA test was completed during the week of September 13th. The time remaining in the month of September provided the researchers with the opportunity to analyze the data acquired through the test before the High Speed Research (HSR) program ends.

FO OUTLOOK

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Fan Motor Repair Teams... *By Rusty Hunt*

NFAC, Radio Ch. 1, Friday, April 9th, 1999: "Uh, Tom, this is Frank. Can you come up to FM 6?" So began the NFAC fan motor repair project of 1999. An original design defect had caused two serious problems in the main drive motors. All 960 pole mounting bolts had to be replaced with new bolts and special custom washers. Simultaneously, 19 damaged rotor pole pieces weighing 675 pounds each had to be removed, repaired, and replaced. In the best teamwork I've ever seen on a project of any size, people from NFAC and all over Ames Research Center pulled together and got our wind tunnel back on line.

Mechanics

(L to R); Jerry Robinson, Felton Smith, Alex Saura, Dan McConnel, Steve Nance, Bill DePaoli, Victor Cruz, Bill Pennef

First job: Design. The engineering team of Dave Brown, Mike Ospring, John Perry, Steve Ord, Dan Petroff, Tina Panontin, Jim Barnes, and Andy Spizak did an excellent evaluation and developed a new bolting system. An entire hoist and rigging system had to be designed too, for removing and installing the pole pieces. Over the weekend, Ken Kono designed an A-frame hoist and sliding support table, and wrote a complete rigging procedure. Dave Brown checked his design; Jason Brown formalized the procedure. First job done.

Next job: Complete repairs on time, on budget, and without incident. Dave Brown and Lich Tran managed and coordinated the bolt replacement and pole removal, repair, and installation. Jim McCusker supervised the electrical work, and ensured that the motor repair shop correctly repaired all of the 19 poles. Mike Herrick provided his usual expert counsel on all electrical issues. Bob Olgiati handled all the procurement issues, including some special challenges getting acceptable bolts delivered on schedule. Jason Brown wrote the procedures, trained the crews, monitored the progress, and was key to completing the job without incident. Bob Suratt developed QA requirements and inspection records, then made sure the requirements were followed. Mike Reeves planned the rebalancing of the motors, and installed a vibration system communications network that provided data 90% faster. Tom Harvey and Guillermo D'Allesandro inspected 1,440 amortiseur bars twice.

Overnight, Code FM's metal fabrication shop began cutting, welding, and installing hoist equipment. Jim Govorko, Tom Gilbertson, and Rick Wittrock kept their mechanics working seven days a week, including two weekends, until the job was done. Our own Frank Rosal and Victor Cruz worked an unprintable number of hours one Saturday installing a temporary transformer so that work continued without delay.

Soon, though, it became obvious the job was going to take much longer than expected with the number of people available. Right then, Steve Nance, Felton Smith, Bill Peneff, and Ruben Torrecampo asked to help. They said this tunnel wasn't going to get back up unless everyone pitched in. So they did, working many, many hours after their normal shifts. They removed welds and paint, installed the new bolts and washers, and torque-checked them again and again.

Engineers

Front row (l to r); Jim McCusker, Jason Brown, Mike Herrick, Ken Kono, Lich Tran
Back Row; Lew Mermelstein, Janet Beegle, Jim Barnes, Dave Brown, Bob Olgiati

Jay Montgomery's crew, including Leadmen Jerry Robinson and Dave Conoly, with Alex Saura, Dan McConnell, Bill DePaoli, Victor Cruz, Cliff Whitton and a whole bunch of folks from our other facilities, did an absolutely fantastic job on the most complicated part of the project. They carefully removed each damaged pole from the motor, lowered it to a cart, transported it down to the "weigh station," weighed it, and packaged it for safe shipment to the repair shop. Then they took a repaired pole, weighed it, carted it up to the motor, hoisted it into the nacelle, and installed it in the rotor. Nineteen times. 675 pounds each time. Without damaging any critical electrical components of the motors. Without so much as a skinned knuckle. And with dedication and enthusiasm.

Six weeks of twelve-hour days and weekends, and the motors were fixed. All that was left was cleanup, electrical checks, and the IST. Under the steady leadership of Tom Vahle, Sverdrup electricians Frank Rosal, Larry Shuk, Mohammed Suleiman, Eddie Nebre, Jun Gobaleza, and a bunch of other folks did the impossible. They checked rotor and stator insulation and conductivity on six motors in three days, half the time expected. During IST, they racked circuit breakers about eight thousand times (again, without incident) and did countless more tests.

Final job: Testing. When the project manager remembered that we had to have an IST plan before we could run the IST, Janet Beegle produced one overnight. Not because it was her job, but because it needed to be done. Then she was the test Director for the entire two week IST. Her consistent professionalism kept our IST going on schedule, without incident. And when the project manager left for two weeks of military leave, Lew Mermelstein planned all IST activities, developed the IST schedule, and saw the IST through to completion. Without incident. On time. Even with the now-infamous "sycamore pollen" delay.

The NFAC has a unique, exceptionally talented team of dedicated professionals keeping it running. Good thing, too. Since January, besides the fan motor repair project, the NFAC staff has tested the SHARC, the Wright Flyer, the XV-15, and the Tail Plane Icing model; rebuilt nine gear boxes on Louver 7 and thirteen gear boxes on Vane Set 6; removed and reinstalled three fan blades on a very tight schedule; repaired FM2; repaired the A1 set five different times; finished the Inter-Pole Shunting IST; and responded to about a billion trips, alarms, false starts, sticking lock pins, misaligned door latches, and all the other quirks of this fifty-plus-year-old national resource. Thanks to everyone who worked so hard to repair the main drive motors on schedule, on budget, and without injury or incident; and thanks to everyone who continues to keep the Largest Wind Tunnel in the World operating. It couldn't be done without you.

Electricians

(L to R); Larry Shuk, Jun Gobaleza, Eddie Nebre, Guillermo D'Alessandro Not pictured; Tom Vahle, Tom Harvey

Employee of the Month Awards

Lew Mermelstein

Contractor of the month, Lew Mermelstein, efficiently stepped up to assume the role of project manager for the NFAC motor repair project for Rusty Hunt, who was on military leave. Lew not only assumed the management duties but, maintained his support role in assuring the motors passed electrical testing, writing a portion of the IST plan, and being the IST's electrical engineer. Additionally, he noted a correlation between data from an electrical pole drop test on the motors that correlated to the number of broken ammortisuer bars. This test appears easier and more reliable at finding damaged bars than the visual inspection and will be used in the future to point to the damaged bars. No sooner had the motor repair project ended than Lew was thrust into resolving a problem with the 150 Hz motor-generator set powering the RTA apparatus. Despite lack of documentation Lew was able in a short time to isolate several problems in the controls of the set that had been there since the set was modified. His above average performance has enabled the NFAC to minimize schedule slip while improving safety of operations. Lew receives a Contractor of the month award for June.

George Reynolds

Congratulations to George Reynolds for being voted Contractor of the Month for the month of June. After a security breech by a hacker forced some control system computers at the 9x7 to be taken off-line, George helped the Unitary Modernization Project fix the problem by installing TCP-wrappers on all of the control system computers. In addition, George tested all the computers to ensure that the wrappers were working correctly. Being entirely unfamiliar with the design of the control system, George was a quick study in determining the system configuration, identifying where the security holes were, and obtaining the approved patches to the system software to close the entry points. George accomplished this work in a professional and highly responsive manner while also supporting the SDS 2.3 release activities in the 11-Foot Wind Tunnel. Thanks to George's effort the 9x7 Control System development saw only little down time. His work was critical to the 9x7 Project's productivity and important to the Center due to recent security issues.

Peter Graube and Mark Phillips

Mark Phillips and Peter Graube

Peter Graube (FEU) and Mark Phillips (FOF) have received employee of the month awards for their outsanding effort in reprogramming the logic for the Unitary Main Drive Speed Control (MDSC) into a PLC controller. This effort was accomplished in a very short time and was initiated at their incentive to solve a couple of problems with the MDSC as delivered by GE. The lower level controllers that contained the logic originally were programmed in a proprietary language that only GE had access to and additionally, the controllers had a Y2K problem. To correct this meant that we would have to contract with GE to change the controller and software and then conduct a mini IST to verify the change. This still left us needing GE to assist in the solution of downtimes to get GE on site. By programming the logic into a PLC we now have the ability to troubleshoot the system by ourselves and the PLC environment makes that easier.